02380634 **Image available**

ELECTRIC FIELD BEARING

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PUBLISHED: December 24, 1987 (19871224)
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APPLICANT(s): SEIKO EPSON CORP [000236] (A Japanese Company or Corporation), JP (Japan)
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ABSTRACT

PURPOSE: To reduce frictional resistance on a sliding face, by using electrets to form the mechanical sliding face or a mechanical sliding point.

CONSTITUTION: A bearing electret 3 is fitted on the inner face of a metallic bearing 1, and a rotary shaft electret 4 is engaged with a metallic rotary shaft 2, for forming a rotor, and this rotor is fitted in the bearing 1. In this case, the bearing electret 3 and the rotary shaft electret 4 are attached as they are the same in their polarity at the sliding parts. As a material of these electrets, polyvinylidene fluoride is used. Accordingly, frictional resistance in this electret sliding body is reduced, by floating effect on the sliding face, which is brought by the electric field.

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審査請求　未請求　発明の数 1　(全2頁)

⑤4発明の名称　電界軸受

⑳特　願　昭61-140604
㉒出　願　昭61(1986)6月17日

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明細書

1. 発明の名称

電界軸受

2. 特許請求の範囲

機械的摺動面、あるいは点には少くともエレクトレットが用いられて成る事を特徴とする電界軸受。

3. 発明の詳細な説明

〔産業上の利用分野〕

本発明は軸受の構成に関する。

〔発明の概要〕

本発明は、軸受の構成に関し、

(1) 回転軸受の支持部及び回転軸の双方またはいずれか一方がエレクトレットで構成されるか、あるいはエレクトレットが少くともその表面に構成されて成る事を特徴とする事、

(2) ボール・ベアリングの回転球及び上・下支持部の三つの部分またはいずれか一つの部分または二つの部分がエレクトレットで構成されるか、あるいはエレクトレットが少くともその表面に構成されて成る事を特徴とする事、

(3) リニア摺動部の基体部及びすべり部の接触面において、少くともいずれか一方または双方の少くとも表面がエレクトレットで構成されて成る事を特徴とする事、

(4) 歯車の少くとも噛合せ部に於て、少くともいずれか一方、又は双方の少くとも表面はエレクトレットで構成されて成る事を特徴とする事、

等である。

〔従来の技術〕

従来、軸受部は金属、あるいは合成樹脂、あるいはセラミック等で形成されて成るのが通例であった。

〔発明が解決しようとする問題点〕

しかし、上記従来技術によると、摺動部での摩擦抵抗が大きく、ひいてはエネルギー損失を伴うという問題点があった。

本発明は、かかる従来技術の問題点をなくし、摩擦抵抗の小なる摺動・軸受構成を提供する事を目的とする。

〔問題点を解決するための手段〕

上記問題点を解決するために、本発明は局域的摺動面あるいは点には少くともエレクトレットを用いる手段をとる事を基本とする。

〔作　用〕

摺動・軸受部にエレクトレットを用いると、クーロン力（電界力）により2物体間が浮上する作用が働き、摩擦抵抗を減ずる作用となる。

〔実施例〕

以下、実施例により本発明を詳述する。

第1図は本発明の一実施例を示す電界回転軸受の断面図である。すなわち、金属の軸受1の内面には軸受エレクトレット3がはめ込まれ、金属の回転軸2には回転軸エレクトレット4がかみ合わされて形成され回転子となり軸受内にはめ込まれて成る。この場合、摺動部では同一極性となるように軸受エレクトレット3及び回転軸エレクトレット4が構成される。エレクトレットとしてはポリフッ化ビニリデン（PVDF）が用いられ、軸受1、回転軸2も該エレクトレットで一体構成されても良い。

第2図は本発明の基本構成例を示す電界摺動体断面図であり、単一極性のエレクトレットから成る台座エレクトレット11上に摺動体エレクトレット12が設置され、摺動体エレクトレット12が台座エレクトレット11上を摺動するものである。

本発明は、軸受体摺動部分のいずれかの一部分の少くとも表面がエレクトレッドが構成されていれば良く、モーターの回転軸、ベアリング、レール上の摺動体、歯車等に応用できるものである。

〔発明の効果〕

本発明の如く、エレクトレット摺動体では、電界による摺動面の浮上効果により摩擦抵抗が減少される効果があり、エネルギー損失の少ないモーター等の回転体、すべり体等が製作できる効果がある。

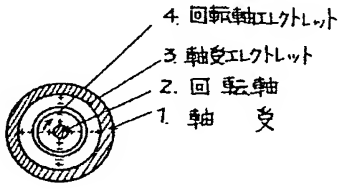
4.　図面の簡単な説明

第1図及び第2図は本発明の実施例を示す電界軸受の断面図である。

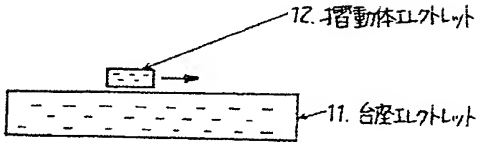
1 …… 軸受
2 …… 回転軸
3 …… 軸受エレクトレット
4 …… 回転軸エレクトレット
11 …… 台座エレクトレット
12 …… 摺動体エレクトレット

以　上

出願人　セイコーエプソン株式会社
代理人　弁理士　最　上　務　他1名



第1図



第2図

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

AVENTIS PHARMACEUTICALS INC. and AMR TECHNOLOGY, INC., Plaintiffs, v. BARR LABORATORIES, INC., RANBAXY LABORATORIES LIMITED and RANBAXY PHARMACEUTICALS INC., Defendants.	Civil Action No. 04-1064 (JAG) **SECOND AMENDED AND SUPPLEMENTAL COMPLAINT**

Plaintiffs Aventis Pharmaceuticals Inc. ("Aventis") and AMR Technology, Inc. ("AMR"), by their attorneys, for their Second Amended and Supplemental Complaint against Barr Laboratories, Inc. ("Barr"), Ranbaxy Laboratories Limited and Ranbaxy Pharmaceuticals Inc. (collectively, "Ranbaxy") allege as follows:

Nature of the Action

1. This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code, Sections 100 *et seq.* This action relates to generic

versions of Aventis's ALLEGRA® and ALLEGRA-D® drug products for which Barr has obtained marketing approval from the U.S. Food and Drug Administration ("FDA") and which Barr has marketed and intends to market in the United States. This action also relates to generic versions of Aventis' ALLEGRA® drug products for which Teva Pharmaceuticals USA, Inc. ("Teva") has obtained approval from the FDA and has been marketing in the United States after being induced to engage in such marketing by Barr. Aventis and AMR assert that Defendants' conduct constitutes infringement and induced infringement under 35 U.S.C. § 271 of one or more of the claims in patents assigned to AMR and licensed to Aventis.

The Parties

2. Aventis is a corporation organized and existing under the laws of Delaware, having its principal place of business at 300 Somerset Corporate Boulevard, Bridgewater, New Jersey 08807. Aventis sells drug products containing fexofenadine hydrochloride in the United States under the trademarks ALLEGRA® and ALLEGRA-D®.

3. AMR is a corporation organized and existing under the laws of Vermont, having its principal place of business at 5429 Main Street, Manchester, Vermont 05255. AMR is a wholly owned subsidiary of Albany Molecular Research, Inc., a Delaware corporation.

4. On information and belief, Barr is a corporation organized and existing under the laws of Delaware, has its principal place of business at 2 Quaker Road, Pomona, New York 10970, and has a regular and established place of business in Northvale, New Jersey. In all relevant respects, Barr is the successor in interest to Barr Laboratories, Inc., a New York corporation. Barr and its predecessor in interest are hereinafter referred to collectively as "Barr."

5. On information and belief, Ranbaxy Laboratories Limited is a corporation organized and existing under the laws of India, having its principal place of business at 19 Nehru

Place, New Delhi, India 110019 and having an office and agent at 600 College Road East, Princeton, New Jersey 08540.

6. On information and belief, Ranbaxy Pharmaceuticals Inc. is a corporation organized and existing under the laws of Delaware, having its principal place of business at 600 College Road East, Princeton, New Jersey 08540.

Jurisdiction and Venue

7. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1338(a), 1400(b), 2201 and 2202.

8. This Court has personal jurisdiction over Barr by virtue of, *inter alia*, Barr's presence in New Jersey, its continuous and systematic contacts with New Jersey and its consent to being sued in New Jersey, as evidenced by its qualification to do business in New Jersey and appointment of The Corporation Trust Company as its registered agent in New Jersey.

9. This Court has personal jurisdiction over Ranbaxy Laboratories Limited by virtue of, *inter alia*, the presence of its agent and office in New Jersey, its continuous and systematic contacts with New Jersey and its contacts with New Jersey relating to the subject matter of this action.

10. This Court has personal jurisdiction over Ranbaxy Pharmaceuticals Inc. by virtue of, *inter alia*, its presence in New Jersey, its continuous and systematic contacts with New Jersey and its contacts with New Jersey relating to the subject matter of this action.

11. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391 and 1400(b).

The Patents

12. United States Patent No. 5,581,011 (the "'011 patent") duly and legally issued on December 3, 1996 to inventor Thomas E. D'Ambra. The '011 patent was assigned to Albany

Molecular Research, Inc., a New York corporation, which subsequently assigned its rights to Albany Molecular Research, Inc., a Delaware corporation, which later assigned its rights to AMR. At all times from the issuance of the '011 patent to the present, AMR or one of its predecessors in interest has been the owner of the '011 patent, and Aventis or one of its predecessors in interest has been the exclusive licensee of the '011 patent.

13. United States Patent No. 5,750,703 (the " '703 patent") duly and legally issued on May 12, 1998 to inventor Thomas E. D'Ambra. The '703 patent was assigned to Albany Molecular Research, Inc., which subsequently assigned its rights to Albany Molecular Research, Inc., a Delaware corporation, which later assigned its rights to AMR. At all times from the issuance of the '703 patent to the present, AMR or one of its predecessors in interest has been the owner of the '703 patent, and Aventis or one of its predecessors in interest has been the exclusive licensee of the '703 patent.

Acts Giving Rise to this Action

14. Barr submitted Abbreviated New Drug Applications ("ANDAs") 76-169, 76-191 and 76-236 to the FDA under Section 505(j)(1) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 355(j)(1)), seeking approval to engage in the commercial manufacture, use and sale of 60 mg fexofenadine hydrochloride capsules, 30 mg, 60 mg and 180 mg fexofenadine hydrochloride tablets, and 60 mg fexofenadine hydrochloride/120 mg pseudoephedrine hydrochloride tablets (collectively, "Barr's Fexofenadine Products"). Barr has received approval from the FDA to market certain of Barr's Fexofenadine Products. On information and belief, the fexofenadine hydrochloride drug substance contained in Barr's Fexofenadine Products has been manufactured by Ranbaxy. Ranbaxy manufactured the products with knowledge and intent that they will be imported into the United States. On information and belief Ranbaxy controls and directs such importation.

15. On information and belief, Barr has used and sold certain of Barr's Fexofenadine Products in the United States.

16. On information and belief, Defendants continue to intend to engage in the commercial manufacture, use and sale of the fexofenadine hydrochloride drug substance and Barr's Fexofenadine Products in the future and upon receiving FDA approval to do so.

17. Teva submitted ANDA 76-447 to the FDA under Section 505(j)(1) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 355(j)(1)), seeking approval to engage in the commercial manufacture, use and sale of 30 mg, 60 mg and 180 mg fexofenadine hydrochloride tablets ("Teva's Fexofenadine Products"). Teva has received approval from the FDA to market Teva's Fexofenadine Products.

18. On information and belief, the fexofenadine hydrochloride drug substance contained in Teva's Fexofenadine Products has been manufactured by Amino Chemicals Ltd., DiPharma S.P.A. and DiPharma Francis Sr.l. with knowledge and intent that the products will be imported into the United States.

19. On or about September 6, 2005, Barr and Teva entered into an agreement whereby Barr transferred its 180-day exclusivity period under 21 U.S.C. § 355 to Teva after Barr triggered that exclusivity period through a commercial sale or sales of certain of Barr's Fexofenadine Products.

20. After Barr's transfer of the 180-day exclusivity period to Teva, Teva has engaged in the commercial use or sale of certain of Teva's Fexofenadine Products in the United States. But for the agreement with Barr, Teva would not have used or sold Teva's Fexofenadine Products in the United States.

21. The '011 and '703 patents claim fexofenadine intermediates and processes for making fexofenadine. Defendants' conduct has infringed and will infringe those patents

22. Defendants had notice of the '011 Patent and the '703 Patent at the time of their infringement.

23. Plaintiffs notified Defendants that their manufacture, importation, use or sale of the fexofenadine hydrochloride drug substance and Barr's Fexofenadine Products may infringe the '011 and '703 patents. On information and belief, despite this knowledge, Defendants have not altered their conduct to avoid infringement.

24. Defendants' infringement has been, and continues to be, willful and deliberate.

25. Plaintiffs have been substantially and irreparably damaged and harmed by Defendants' infringement. Plaintiffs do not have an adequate remedy at law.

26. Plaintiffs have also suffered damages from Defendants' infringement.

Count I
Declaratory Judgment of Patent Infringement

27. Plaintiffs repeat and reallege the facts of paragraphs 1-26 above.

28. On information and belief, Barr has submitted all information to the FDA necessary to obtain marketing approval for any of Barr's Fexofenadine Products not yet approved. On information and belief, marketing approval for any of Barr's Fexofenadine Products not yet approved is imminent, subject only to statutory stays arising from the pendency of related patent litigation in this Court. Defendants' manufacture, importation, use or sale of the fexofenadine hydrochloride drug substance and Barr's sale of Barr's Fexofenadine Products and its continuing intention to engage in commercial manufacture, use, sale or offers to sell of Barr's Fexofenadine Products create an actual case or controversy with respect to the infringement of the '011 and '703 patents.

Count II
Patent Infringement

29. Plaintiffs repeat and reallege the facts of paragraphs 1-26 above.

30. Defendants' commercial manufacture, importation, use or sale of the fexofenadine hydrochloride drug substance, and Barr's commercial manufacture, importation, use or sale of Barr's Fexofenadine Products has infringed one or more claims of the '011 and '703 patents under 35 U.S.C. §271(a) and (g).

Count III
Inducement of Patent Infringement

31. Plaintiffs repeat and reallege the facts of paragraphs 1-26 above.

32. Barr actively, knowingly and intentionally induced Teva's infringement by inducing Teva to engage in the use or sale of certain of Teva's Fexofenadine Products that infringed one or more claims of the '011 and '703 patents, under 35 U.S.C. §271(a), (b) and (g).

33. But for Barr's inducement, Teva could not have engaged in commercial sales of certain of Teva's Fexofenadine Products.

34. Barr's inducement of Teva to sell infringing products is infringement pursuant to 35 U.S.C. §271(b).

WHEREFORE, Plaintiffs respectfully request the following relief:

(a) A judgment that Defendants' commercial manufacture, importation, use or sale of the fexofenadine hydrochloride drug substance, and Barr's commercial manufacture, importation, use or sale of Barr's Fexofenadine Products, has infringed or will infringe each of the '011 and '703 patents;

(b) A judgment permanently enjoining Defendants from making, using, selling, offering to sell, or importing the fexofenadine hydrochloride drug substance or Barr's Fexofenadine Products until after expiration of each of the '011 and '703 patents;

(c) A judgment that Barr induced Teva to engage in the commercial manufacture, importation, use or sale of Teva's Fexofenadine Products resulting in infringement of each of the '011 and '703 patents;

(d) A judgment awarding Plaintiffs damages resulting from such infringement, increased to treble the amount found or assessed, together with interest;

(e) Attorneys' fees in this action pursuant to 35 U.S.C. § 285;

(f) Costs and expenses in this action; and

(g) Such further and other relief as this Court may deem just and proper.

Dated: April 25, 2006

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